Surface Area and Volume of Spheres

Sphere - the set of all points in space that are equidistant, r, from a point called the center

Chord - a chord of a sphere is a segment whose endpoints are on the sphere

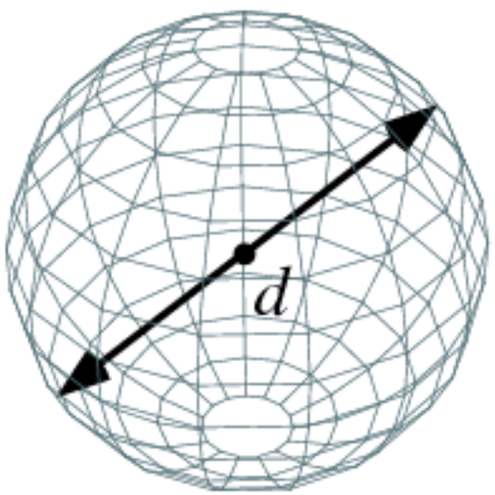
Diameter - a diameter of a sphere is a chord that contains the center of the sphere as one of its points

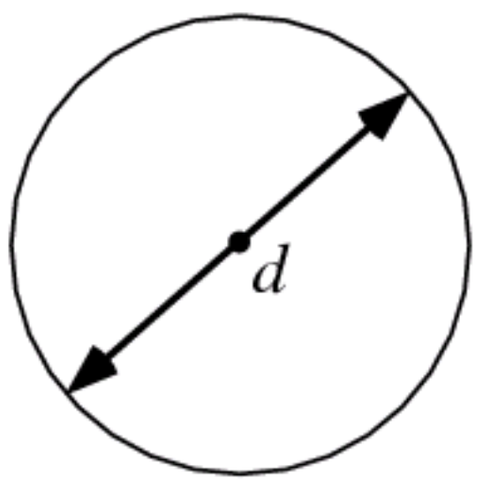
Radius - a radius of a sphere is a segment whose endpoints are at the center of the sphere and on the sphere

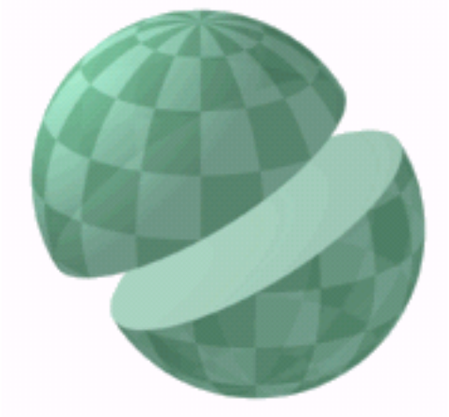
Great Circle - if a plane intersects a sphere and goes through the center of the sphere, then the intersection is called a great circle

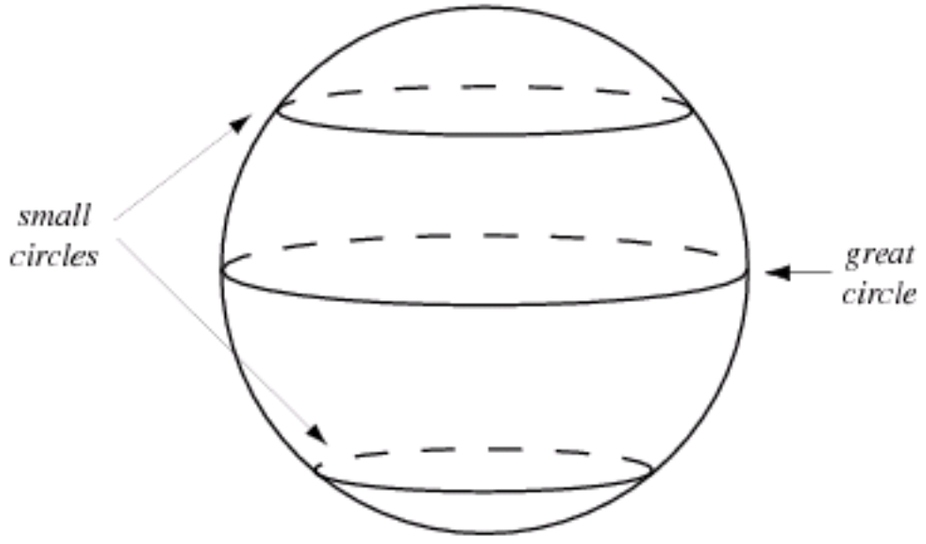
Hemisphere - each great circle of a sphere separates a sphere into two congruent halves called hemispheres

Sphere Chord Diameter Radius Great Circle Hemisphere









Theorem 12.11 Surface Area of a Sphere
The surface area, S, of a sphere of radius r is

$$S = 4\pi r^2$$

Find the surface area of a sphere that has a radius of 7 inches.

Theorem 12.12 Volume of a Sphere
The volume, V, of a sphere of radius r is

$$V = 4/3 \text{ pi } r^3$$

Find the volume of a sphere that has a radius of 4 ft.

Practice: p. 623 (1-8
13 - 16,
17 - 20
33 - 36)

Homework: Extra Practice 12.6 (1-8, 13-15)